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United States  
Department Of  
Agriculture

Forest  
Service

Shasta-Trinity National Forest  
2400 Washington Avenue  
Redding, CA 96001

Reply To: 3420

Date: August 21, 1989

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Subject: Evaluation of insect conditions in Ridgeline Timber Sale, Hayfork  
Ranger District (Report No. N89-18).

To: Forest Supervisor, Shasta-Trinity NF

The Ridgeline Timber Sale was prepared to salvage some areas on the Hayfork RD that were burned in the Fire Siege of 1987. Units of the sale are located approximately 2 to 3 miles north of Forest Glen. No harvest activity has taken place on the sale because of a court injunction. Some questions have arisen about the possibility of a buildup of bark beetles in the fire-damaged timber. On August 16, 1989 several units of the sale were examined by Dave Schultz, Entomologist from the Forest Pest Management Northern Service Area, and Jerry Brogan, Shasta-Trinity NF Timber Management Officer.

Tree mortality is higher than normal in most areas of the District because precipitation has been lower than normal during the past few years. Current tree mortality in the burned areas is higher than that seen in the surrounding unburned areas. In most cases it is possible to identify a serious fire-caused injury to the crown or bole of dying trees in the burned area. A combination of drought stress and fire-caused injuries have resulted in a large number of trees in the burned areas which are susceptible to attack by a variety of bark beetles, engraver beetles, flatheaded borers, and roundheaded borers. The current mortality involves all of the species of conifers present in the area, as well as several hardwood species. Each of the tree species dying in the area was infested with one to three species of beetles under the bark. In some cases, several species of beetles infesting a single tree were in competition for the same resource. Although there were many dying trees in the burned areas, they tended to occur as scattered individuals, rather than as groups.

The large number of tree species and beetle species involved in the current mortality, as well as the scattered nature of mortality, all indicate the mortality is part of a slow attrition of trees damaged by fire. Several years of dry weather have slightly accelerated the process, but there still does not appear to be a substantial buildup of any single species of beetle. Mortality should be lower after precipitation returns to normal and the most severely injured trees have been eliminated from the population. Because some of the borers can have life cycles that extend over 3 or 4 years, trees which are attacked during dry weather may not die until some years after precipitation has returned to normal. The level of mortality over the long term in the burned areas may be higher than in unburned stands because the stands tended to be mature to overmature and there will be some lingering injuries from the fire.

Management Alternatives





1. Do nothing. This assumes that no harvest or further rehabilitation work is anticipated. Mortality should continue at the current level until approximately one year after precipitation returns to normal, and then decline over a period of several years. For at least the next 20 to 30 years mortality will be higher than comparable unburned stands. Some of the existing trees will survive to become predominants in the succeeding stand. If some of the trees currently infected with dwarf mistletoe survive long enough, they could infect the next stand that develops. Natural regeneration is very sparse in some units. If the area is not planted, it could take a considerable length of time until the site is fully occupied.

2. Salvage currently dead and dying trees. Removal of the currently dead and dying trees will have little or no effect on future mortality. Salvage would recover some wood, which is deteriorating at a rapid rate. Salvage activities may bare some mineral soil and increase the amount of natural regeneration. Salvage of the currently dead and dying trees will remove some snags and reduce the amount of dead fuel on the site. These will be replaced as some of the currently green fire-damaged trees die. Some pockets of timber have 25 to 50 percent of the green trees damaged severely enough by fire that the trees have a high probability of dying in the near future. The long term effects of salvaging only dead trees are very similar to the Do nothing alternative.

3. Create logical sale units. A considerable number of green trees in the sale units have been damaged severely enough by fire that they can be expected to die in the near future. The loss of these trees may leave some areas understocked or may make some prescriptions, such as a shelterwood, unworkable. In most cases, the only effect that the removal of the damaged trees will have on future mortality is to reduce competition on some of the residual trees. In some cases, the removal of a damaged living pine may prevent attacks on immediately adjacent pines by removing the potential center of a bark beetle group kill. Unless there is a need to retain the damaged trees for snag or organic debris recruitment, it would be more efficient and cause less site disturbance to remove them in a single entry along with the salvage.

If you need more information or have questions about this evaluation, please call Dave Schultz at 916-246-5087.

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